

SECTION 6

Demand Management Measures

The unpredictable water supply and ever increasing demand on California's complex water resources have resulted in a coordinated effort by the DWR, water utilities, environmental organizations, and other interested groups to develop a list of best management practices for conserving water. This consensus-building effort resulted in a Memorandum of Understanding Regarding Urban Water Conservation in California (MOU), which formalizes an agreement to implement these practices and makes a cooperative effort to reduce the consumption of California's water resources.

6.1. Water Reduction Requirements

The City of Roseville is a signatory to the California Urban Water Conservation Council (CUWCC) MOU and a United States Bureau and Reclamation (USBR) contractor that is required to develop and maintain a water conservation plan consistent with the requirements of the Central Valley Project of 1992. In addition, Roseville is a member and signatory to the Water Forum which also includes requirements for water conservation programs. The USBR and the Water Forum use the CUWCC MOU method of compliance to satisfy the requirements of their agreements. The City has chosen to utilize the Gallons Per Capita Per Day (GPCD) compliance option offered by the CUWCC, thus committing to reduce its GPCD water use by 18% by the year 2018 from the established baseline (shown in Table 6-1). The City chose this compliance option to be consistent with the efforts and reporting structure of the SBx7 7 requirement of a 20% reduction by the year 2020.

Table 6-1 represents the City's CUWCC compliance baseline representing a 10 year average for years 1997 through 2006, as specified by the CUWCC MOU.

Table 6-1 CUWCC 10-year average baseline calculation

<u>Year</u>	<u>Population</u>	<u>AF</u>	<u>Gallons</u>	<u>GPCD</u>	<u>10 yr average GPCD</u>
1997	62,315.68	23,000	7,494,582,857	329.5	
1998	65,765.74	20,462	6,667,571,931	277.8	
1999	69,518.74	24,177	7,878,109,989	310.5	
2000	77,627.38	25,646	8,356,785,737	294.9	
2001	79,564.78	27,427	8,937,127,131	307.7	
2002	82,586.60	29,718	9,683,652,754	321.2	
2003	87,442.08	29,743	9,691,799,040	303.7	
2004	92,856.04	32,325	10,533,133,575	310.8	

2005	99,164.18	31,480	10,257,789,480	298.5	
2006	100,545.28	33,636	10,960,324,236	298.7	305.3

Table 6-2 presents the City's compliance table to satisfy the implementation schedule of the CUWCC GPCD compliance option to reduce water use by 18% by the year 2018.

Table 6-2 CUWCC GPCD Compliance table

Year	Compliance Report	Target GPCD (% of baseline)	Highest acceptable GPCD bound (% baseline)
2010	1	294.3	305.3
2012	2	283.3	294.3
2014	3	272.3	283.3
2016	4	261.4	272.3
2018	5	250.4	250.4

6.2 Compliance Strategy

The Department of Water Resources has given CUWCC signatories the option to attach their 2009/2010 CUWCC compliance reports as a method of compliance with Section 6 of the Urban Water Management Plan. The City has chosen to attach its 2009/2010 CUWCC compliance reports as its method of compliance. The compliance reports are included as Appendix I. These compliance reports confirm the City is on track to satisfy its CUWCC GPCD conservation savings requirements and have active programs to ensure its compliance.

To achieve and sustain the City's GPCD savings requirements, as specified by SBx7 7 (known as the 20%x2020 bill), Roseville must have comprehensive programs in place. Described is Roseville's current strategy to achieve reduction compliance.

Water Wise House Calls (single-family residential and multi-family residential connections)

Description: This water conservation measure involves inspecting the interior and exterior of single-family and multi-family residential water customers' homes by trained surveyors. Surveys identify water-savings potential and provide incentives to reduce water demand.

Single-family surveys are about two hours in length and are conducted by a one to two-member

team. During the interior portion of the survey the team measures flow rates of existing plumbing fixtures and tests for toilet leakage with dye tablets, checks all water using appliances and fixtures for leaks, offers high-efficiency showerheads and faucet aerators (if necessary), and provides information on the City's rebate programs.

The team then conducts a landscape survey. This involves testing the sprinkler system for irrigation efficiency and distribution uniformity, teaching the customer how to set the irrigation controller, suggesting a four-season irrigation schedule (based on the individual landscape demographics and irrigation system), recommending sprinkler system repairs or improvements, reviewing water bill information, and providing rebate information and brochures on water efficiency methods and ideas. Multi-family surveys are similar, but require coordination with owners/managers, tenants, and landscaping services. Soil moisture probes are also provided to help schedule irrigation times based on soil moisture content. This has proven to be a valuable incentive to reduce water run off.

The City receives calls from customers who have seen the House Call program advertised but the City schedules most of its House Calls through solicitation. Staff sets aggressive water use limits in the billing system and then receives abnormal water use and high water use work orders from the Finance Department. Staff also uses door hangers to promote the House Call program.

Methods to Evaluate Effectiveness: The City uses the CUWCC estimated water savings projections to track the programs level of effectiveness. City staff can also review the surveyed customers' water use records, if available, and compare historic with current use for one year after the survey.

Residential plumbing retrofit

Implementation Description: The City distributes showerheads, aerators, water shutoff nozzles, toilet flappers, moisture meters, toilet tank leak detection tablets, and toilet displacement devices at local events as well as during in-home water audits. At these events the City also emphasizes availability of all programs, including water use surveys, washing machine rebates, and toilet replacement rebates. Through these methods the City will offer retrofit materials to no less than 10 percent of the 15,010 pre-1992 single-family homes each year for 10 years or until 75 percent have been reached with these materials. The City will reach this target through programs,

events, and aggressive public outreach newsletters and mailings, including offers to all customers receiving meter retrofits.

Methods to Evaluate Effectiveness: The City monitors distribution of materials to customers and perform surveys as to customer satisfaction with the materials provided.

System water audits, leak detection and repair

Implementation Description: The City has had a long-standing system leak detection and repair program in place. However, in 2009 the City used the AWWA Water Loss software to develop a water loss assessment of the current system. The first audit using this software was conducted in 2009 and will be used annually. In addition, an annually updated “system map” indicating pipe size, pipe material, connection points and leak history is maintained within the City’s maintenance database. When areas of high leak incidences are identified, corrective action is taken. System leaks are repaired as they are identified. This includes corrosion monitoring programs, service cathodic protection and/or replacement. This may also include doing a detailed leak detection survey to identify leaks in the system. The infrastructure management system is updated with repair information. This enables the City to query for leak prone areas in order to prioritize future rehabilitation programs.

Methods to Evaluate Effectiveness: The City focuses on the older areas of town that are more leak prone. The City will continue to monitor the system for areas that have high incidences of leaks. This evaluation will improve as more customers are converted to metered usage. When a leak is discovered and repaired, it is logged in the City’s asset management system. The amount of water loss from each leak found are estimated based on the assessment of the operation crews that responded to the leak.

Metering with commodity rates for all new connections and retrofit of existing connections

Implementation Description: A meter retrofit program has been developed and is currently being implemented. The retrofit program addresses metering of all pre-1992 residential services in Roseville as well as a transition of all residential accounts to an inclining block rate structure. Implementation of metered rates began immediately on all residential metered connections established after January 1, 2002, with the remaining retrofitted homes transitioned in large blocks as retrofits are completed. During program development, it was requested that

customers be provided water use information for a period of one year before transitioning to a metered rate. This has been incorporated into the plan, and the first block of homes to be transitioned began receiving comparative data in March 2003 with transition to metered rates in April 2004. Other blocks of homes will have metered rates implemented after completion of meter installation and following a year of comparative bill information.

The meter retrofit program will be complete in December 2011 and all residential customers will be billed on a metered rate by December 2012. Having a fully metered service territory will help staff better understand usage patterns making for better program management.

Methods to Evaluate Effectiveness: Effectiveness of this program will be evaluated by comparison of prior water use to future water use once the system is completely metered.

Landscape conservation programs and incentives

Implementation Description: The City has developed water budgets for 93% of its dedicated irrigation accounts, large and small. These budgets were created using the City's graphical information system (GIS) and then field sampled for accuracy. The budget reports, produced monthly, show the customer what their water use was for the month as compared to what the water budget calculation estimated the water use to be based on their sites demographics. Staff requests meetings with landscape contractors and/or property managers/owners when a water budget is 20% or more out of budget. City locations, including parks, streetscapes and lighting and landscape districts fall under this program and are contacted if out of budget. City staff is working to create a budget based rate structure to further incentivize adherence to the established water budget.

In 2008, Roseville created a turf replacement program titled "Cash for Grass" that provides incentive for customers to replace their turf with water efficient landscaping. Turf is purchased at \$1 per square foot up to \$1,000 per residential site. To comply, participants must not only remove their turf but install a low volume irrigation system to irrigate their new water efficient landscape.

In 2008, Roseville created a pool cover rebate program that provides incentive to pool owners to cover their swimming pool. The intent of the program is to minimize evaporation and save water during the summer months.

In 2010, Roseville created programs that provide incentive for upgrading an inefficient irrigation system with new high efficiency equipment. The program includes the installation of weather based irrigation controllers, conversion of high use pop up spray heads to low volume spray heads, conversion of high use pop up spray heads to a low volume drip irrigation system, replacing a leaking irrigation valve, installation of check valves to eliminate low head drainage, and installation of pressure regulating valves.

In 2010, Roseville adopted a water efficient landscape ordinance pursuant to the requirements of AB 1881. These requirements apply to all landscapes installed after January 1, 2010 for industrial, commercial, office, institutional, multi-family residential common areas, model homes and developer installed landscaping for single-family residences. Roseville will continue to enforce these landscape requirements through submittals to the Planning Department. Developer landscape architect self-certification, along with periodic spot checks of plans, ensures compliance with landscape requirements. The water utility will be running water budget reports monthly on the affected landscapes confirming compliance.

Roseville provides free landscape audit services for any customer in need. Staff evaluates the irrigation system and makes recommendations for improvement. Rebates are available to further incentivize the customer to make improvements to their irrigation systems.

For most commercial metered accounts, large irrigation accounts and large lot residential accounts, financial savings due to water conservation are realized directly on monthly water bills. Roseville staff can help identify these savings through water use reviews, incentives and resulting education opportunities. In most instances, helping customers understand the savings that can be achieved and methods available to achieve these savings can be enough to motivate changes. The City continually works with the Parks Department, area school districts, and landscape contractors and property managers to improve water use efficiency.

Methods to Evaluate Effectiveness: The City will continue to implement this program by annual review of customers' water use and by offering on-site follow-up evaluations to customers whose

total water use is thought to exceed normal patterns.

Review of the landscape requirements is initiated as required, and spot checking for compliance by the Planning Department determines compliance supplemented by the monthly review of water budget compliance. Continued reduction in the per capita water consumption for the City also indicates the effectiveness in these requirements.

High-efficiency washing machine rebate programs

Description: In addition to providing water service to customers within the Roseville service area, the City is also responsible for providing electric service within the service area and wastewater collection and treatment on a much larger, regional area. A cooperative program is in place that provides for rebates toward the purchase of a high-efficiency washing machine. Through 2009, the City's electric department contributed financially to this program. As of 2010, funding from the electric department is no longer available. Funding from the wastewater utility is still available and being utilized. This program is run much the same way as the current toilet replacement program, utilizing a set budget based on contributions from the participating utilities and provided to applicants on a first come, first serve basis.

Methods to Evaluate Effectiveness: The City will monitor program success through the number of rebates requested. Expansion of the program is considered annually based on the previous years' participation levels, available grant funding, or any budget constraints.

Public information programs

Description: The City promotes water conservation and other resource efficiencies in coordination with the US EPA, the Regional Water Authority (RWA), Roseville Electric, and Roseville's Public Information Department. The City distributes information through paid advertisements, television commercials, featured segments on the local government access channel, website (includes streaming video), the City's Utility Exploration Center, several water efficient workshops each year, movie theater ads, newsletters, bill inserts, bill messages, brochures, vehicle decals, community outreach events, community speaker bureaus, and many special events every year.

In 2005, water bills have been redesigned to show historical water usage on individual accounts.

This information allows businesses and homeowners to monitor water usage as it varies through the year and can be used to reinforce the conservation message.

Roseville's regional waste water treatment plant located at 1800 Booth Road, installed a recycled water garden to demonstrate the benefits of using recycled water as an alternative. This facility is open for tours and can be scheduled through plant staff.

In 2008, the City created the Roseville Utility Exploration Center housed within the Martha Riley Library building, which was recently awarded Gold LEED (Leadership in Energy and Environmental Design) Certification by the U.S. Green Building Council. It is the first building in Placer County to be so honored. Designed for active community use, the center provides a lively combination of hands-on exhibits with a Learning Lab for demonstrations, presentations and workshops. Future plans include an outdoor extension called the Ideascape, which will feature exhibits on water-wise landscaping, irrigation and construction innovations, solar energy, watershed protection and more. Created out of the city's belief that sustainability is a principle to live by, the Exploration Center is a one-of-a-kind environmental learning center focused on bringing visitors information on protecting natural resources in a fun, engaging way. Topics covered include energy efficiency, renewable technology, water conservation and recycling.

The City also is a member of the Regional Water Authority (RWA). RWA has an active public outreach campaign in which the City contributes to. The program consists of paid advertising campaigns to market the Blue Thumb program, public service announcements, partnerships with big box stores to co-market our conservation message, as well as with the local baseball team the RiverCats. RWA hosts an interactive website that contains blogs on water use efficiency, garden tours and program information.

Methods to Evaluate Effectiveness: The City will monitor the effectiveness of the conservation message through planned customer surveys.

School education programs

Description: The City continues to work with the Regional Water Authority (RWA) and the school districts to promote water conservation and other resource efficiencies at school facilities and to educate students about these issues. This is accomplished through full participation in

the school education program coordinated by RWA on behalf of all the member agencies. In addition to being a participating member in RWA, Roseville also contributes to the education programs that are focused directly on in-school education. School outreach, media advertising campaigns, promotional materials, community events and fairs, and a Web site are all a part of this program.

In addition to RWA participation, Roseville supports requests from local schools for presentations, conservation related materials, and facility tours. These are offered to any school within the service area and supported as requested. The City's program also includes presentations to after school and summer programs, such as Adventure Club. The City also works with 6th grade classrooms throughout Roseville to implement the Living Wise program, which is a water and energy efficiency lesson plan that students incorporate into their home life. Through the City's Utility Exploration Center, grade specific water efficiency workshops and activities are given to participating students and the City contributes to the Placer Nature Center which offers tours and educational programs to local students about water use efficiency.

Methods to Evaluate Effectiveness: The City receives a report from RWA on the number of programs, materials distributed and attendance at water conservation activities by grade level. This same information is collected and evaluated for City supported activities as well as activities at the Placer Nature Center.

Conservation programs for commercial, industrial, and institutional accounts

Description: For the last several years, the City has provided water use surveys to commercial/ industrial/institutional (CII) customers upon request. The City also conducts an analysis of all CII customers by monthly and annual water usage to identify the top 10 percent of the commercial customers. The City contacts these customers, by phone, letter or site visit to offer surveys. In addition, the City offers incentives to CII customers to improve their water use efficiency. Programs are evaluated annually but in 2010 the City offered high efficiency toilet rebates, high efficiency washing machine rebates, a pre-rinse spray valve exchange program, and a customized incentive program that can be tailored to a site's needs.

For new commercial and industrial development, the City Planning Department coordinates the implementation of this program at the request of the Environmental Utilities Department. Water

usage and required conservation measures are currently reviewed during the project approval process. This is due to the complexity of many commercial/industrial operations that require savings to be identified by design professionals associated with the project. When projects come in that can potentially require high levels of usage, a requirement is placed on the applicant to review the process for water saving opportunities. Suggested methods may be included in the project conditions if sufficient information is available. This can include items such as requiring recycle capability in car wash facilities, or other conservation measures. In addition, it is expected that the Building Department review the applicable conservation requirements of the Uniform Plumbing Code (UPC) and require compliance.

Methods to Evaluate Effectiveness: The City will continue to implement this program by annual review of customers' water use data, and by offering on-site follow-up evaluations to customers whose total water use increases or stays the same after an initial survey. All new commercial and industrial water applicants will be reviewed for potential savings. In addition, staff will be tracking CII water use in GPCD and working towards a downward trend.

Conservation pricing

Description: As a component of development of the meter retrofit program Roseville adopted conservation pricing for water on all metered accounts. This includes an inclining block rate structure for residential water accounts based on the measured water through the meter on top of a service charge for operational fixed costs. Current residential rates (August 2011) are based on water use units of 100 cubic feet and are:

- \$0.39 per unit for the first 1,200 cubic feet
- \$0.78 per unit for the next 3,000 cubic feet
- \$1.17 per unit for the next 3,300 cubic feet
- \$1.74 per unit for water over 7,500 cubic feet

In addition to the tiered rate structure, effective on billings as of May 1, 2009, all quantity rates identified in Section 14.08.090 will be subject to the water shortage surcharges and excess water use charges when the drought stages identified and set forth in Sections 14.09.070 through 14.09.110 are declared. These charges further incentivize the need to conserve in times of water supply limitations.

These water shortage rate structures are provided in Table 6-3.

**Table 6-3 Summary of Water Shortage Rate Charges
Conservation Pricing**

Summary of Water Shortage Rate Charges			
Stage	Water Use Restriction	Water Shortage Surcharge¹	Excess Water Use Charge²
First Year of a Water Shortage			
Stage 1	10%	None	None
Stage 2	20%	15%	None
Stage 3	30%	33%	25%
Stage 4	40%	45%	50%
Stage 5	50%	60%	100%
Subsequent Year(s) of a Water Shortage			
Stage 1	10%	15%	None
Stage 2	20%	20%	25%
Stage 3	30%	40%	50%
Stage 4	40%	50%	100%
Stage 5	50%	75%	200%

¹The water shortage surcharge shall be added to all quantity rates as applicable, according to drought stage.

²In addition to the applicable water shortage surcharge, an excess water use charge shall be added to Tier 3 and Tier 4 water quantity rates, according to drought stage.

For non-residential accounts, water usage is billed on top of a monthly service charge for fixed operational costs. Current uniform non-residential rates are based on 100 cubic foot units as follows:

- \$0.78 per unit for all water on non-residential accounts

Methods to Evaluate Effectiveness: The City monitors the annual revenue and water usage for its customers and adjusts revenue requirements as necessary to cover operational costs as water use reductions occur resulting from the new rates. As the metering program is fully implemented, the City will be able to better collect and analyze data to track the effectiveness of this program.

Conservation coordinator

Description: The City has a full time water conservation administrator, water conservation specialist, three full time field personnel, one full time administrative clerk, one part time temporary administrative clerk, and two part-time temporary water waste patrol officers. The Conservation Division also pulls assistance from the utility service staff to perform water leak detection and leak repair.

Methods to Evaluate Effectiveness: The City has no method to quantify the savings but believes that this program is in the public's interest.

Water waste prohibition

Description: Roseville currently restricts water waste within the service area. Roseville Municipal Code Chapter 14.09 (presented in Appendix J) defines water waste and associated penalties of continued infractions. Per Water Division policy, water wasters are provided a notice at the location (3 notices in non-shortage conditions, 2 notices in water shortage conditions, and 1 notice with an immediate remedy in urgent water shortage conditions). If the situation is not remedied by the specified time additional measures can be taken to gain compliance. This includes fines, water restrictions, transition to a metered water rate (if applicable), low flow devices or discontinued service.

The City employs two 1,500 hour temporary workers to constantly patrol the Roseville city limits looking for water waste. In addition, full time City staff patrol for waste between appointments. They look for any violation of the City's ordinance and then makes attempt to contact the customer to educate them on the ordinance, give them information about the City's programs and services and leaves a door hanger notice with notification of the problem. The patrols significantly increase the number of Water Wise House Calls the conservation division performs as staff promotes the service at the time the notice is given. The driver of the program is customer contact and education. It is the City's intent to speak with customers before leaving a notice.

The City has an anonymous on-line reporting mechanism that allows customers to report water waste at their convenience. Customers can visit www.roseville.ca.us/waterwaste and submit an electronic form. All reports are investigated upon receipt.

Methods to Evaluate Effectiveness: All citations and violations are tracked annually. Over the period of implementation the City has increased patrols and marketing budgets to increase awareness of the program. The increasing population within the City requires continuous education efforts.

Residential toilet replacement programs

Description: The City established a ULFT (ultra low flush toilet) replacement program in 1999 and an HET (high efficiency toilet) rebate program in 2008. Because of changes to the CUWCC MOU only offering compliance credit for the replacement of high flush toilets with HETs, the City began phasing out its ULFT rebate program. In 2010, the City stopped rebating ULFTs for CII customers and in 2011, the City stopped rebating ULFT's for residential customers and now only offers rebates for HETs. Rebates are offered on a first come/first service basis to customers on an annual basis.

The toilet rebate program is advertised regularly on Roseville's Channel 11, within bill inserts, conservation articles, newsletters, and the City Conservation Web site which includes a rebate application that can be downloaded. Customers can also obtain an application by request through the mail or at special events and City office public counters.

Methods to Evaluate Effectiveness: The City will continue to maintain the replacement program and monitor its success through rebate requests. Expansion of the program will be considered annually based on the previous years' participation.